ring; that the murmur had ceased to be audible because the left auricle had become dilated and its muscle enfeebled; that there was, in addition, incompetence both of mitral and tricuspid valves. This diagnosis was exactly confirmed by the autopsy. Dr. Sansom thought the cases worthy of record, as the observations might be useful in diagnosis.

16. *Variations of Urea in Disease of the Liver.*—In a paper, the first part of which appears in the *Archives de Physiologie*, July, 1876, M. P. BROUARDEL gives a historical sketch of the views which have been from time to time published respecting the part taken by the liver in the formation of urea, from which it would appear that the great weight of evidence, both pathological and physiological, goes to show that a direct relation exists between the functional activity of the liver, and the excretion of urea, so that in all probability a great part of the urea which appears in the urine is formed in the liver. On account of the want of accurate clinical research upon this question, the author proposes to investigate the exact amount of urea excreted daily in various hepatic affections, and by a comparative analysis to arrive at a definite conclusion on the subject. 1. Of fatal jaundice (acute atrophy), no original cases are given; but from those recorded by Frerichs and others, it is regarded as satisfactorily proved that in proportion as this disease progresses the amount of urea steadily diminishes, and finally disappears. 2. In four cases of fatal jaundice produced experimentally in dogs by the hypodermic injection of phosphorated oil, the amount of urea excreted in twenty-four hours always diminished in direct proportion to the amount of phosphorated oil injected, and the severity of the general symptoms seemed also to vary with the amount of the poison used, and the diminution of urea. 3. In four cases of typhoid jaundice (*Ictère pseudo-grave*) with reduction of the size of the liver, the formation of the urea was lessened in the early stages of the disease, and during the typhoid it was observed that the urea was reduced to a minimum. The rather sudden disappearance of the severe symptoms (crisis), was found invariably to take place on the same day as the normal amount of urea appeared in the urine. 4. In three cases of simple spasmodic jaundice, the amount of urea seemed increased, and at the same time the size of the liver was augmented. The diminution in the amount of urea excreted in jaundice is thus made to bear a definite relation to the severity of the symptoms, and the gravity of the prognosis in any given case, and as a general rule it has been found that the formation of urea is in direct proportion to the size of the liver.

The paper is completed in the number of the same journal for September and October. M. Brouardel thus sums up the conclusions at which he has arrived, as to the variations in the excretions of urea in the different forms of liver-disease.

1. In an acute yellow atrophy, the urea diminishes or disappears entirely.

2. In phosphorus poisoning, although each dose of the drug causes a temporary augmentation of the quantity of urea excreted, it slowly diminishes.

3. Some pseudo-malignant cases of acute jaundice have the primary diminution of urea followed by a urinary crisis, and plenty of urea is secreted; the liver, which at first seemed to become smaller, recovers its ordinary size.

4. In simple jaundice, the urea is not diminished, sometimes it is augmented. The quantity of urea is a means of prognosis.

5. In hepatic abscess, according to Parkes, at first the urea is augmented, but this requires verification; as the liver-substance is destroyed it diminishes, although fever may be present.

6. In biliary calculus, with obliteration of the duct and destruction of liver-substance, the urea is diminished, especially during the attack of biliary colic. It is also diminished in hepatic intermittent fever.

7. In both the hypertrophic and the atrophic forms of cirrhosis, the urea is diminished.

8. In the congested and hardened liver of heart disease, the urea is diminished.

9. In the fatty liver of phthisis, the urea falls to low figures.

10. Cancer and hydatids cause the diminution of the urea when a considerable portion of the liver has been destroyed.

11. Active congestion of the liver causes increase of urea.

12. Lead-colic, with retraction of the liver during the attack, is accompanied by a small excretion of urea; as the liver regains its size, the urea augments.

13. Passing glycosuria is often accompanied by an increase in the urea excreted, or this may occur at the moment of its disappearance.

14. In diabetes the excretion of urea reaches a figure unattained in any other disease.

From these conclusions he infers that the quantity of urea depends upon—

1. The integrity of the hepatic cells;
2. The greater or less activity of the hepatic circulation.—*London Med. Record*, Jan. 15, 1875.

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17. *On some New Tests for Bile Pigment.*—Dr. Walter G. Smith, Assistant Physician to the Adelaide Hospital, states (*Dublin Journ. of Med. Science*, Dec. 1876) that he has tried Maréchal's test (*Journ. de Pharm. et de Chemie*, Mars, 1869) in almost every case of jaundice that came under his notice in the wards or dispensary of the Adelaide Hospital, and has repeated and varied the test many times in the one case. A few specimens of bilious urine, kindly furnished to him by other hospital physicians, have also been tested, *and in no single case has he failed to get the distinctive colour reaction.*

The best mode of procedure is to place about ʒj of the urine in a test-tube, and then to allow one or two drops of tinct. iodinii (B. P.) to trickle down the side of the tube, held nearly horizontally, so that the two fluids may touch but not mix. If bile pigment be present, a fine green colour will almost immediately be developed below the red layer of iodine tincture. By holding the test-tube up against a white cloud, or against any white surface, in a good light, the three zones of colour will clearly appear—viz., the red iodine layer, and the yellow stratum of urine, separated by the green layer.

The test succeeds better by flotation in a test-tube than by allowing the tincture of iodine to run into contact with the urine on a white plate.

If the colour of the urine be very dark, it is better to dilute it with at least an equal volume of water before applying the test. Should the quantity of bile pigment be very small, it is advisable to make use of a specimen of healthy, non-bilious urine as a standard of comparison, treating it similarly with the iodine solution. Very small quantities of the pigment can be detected by shaking up a little of the urine with one-fourth its bulk of chloroform. Allow it to stand, decant the supernatant urine, filter the yellow chloroform stratum, evaporate to dryness, and test. With the iodine test Dr. S. has succeeded in showing the presence of bile pigment in the yellow sputum of one case of jaundice. A simple solution of iodine in spirit will not answer, on account of the precipitation of free iodine on dilution, and the liquor iodinii and linimentum iodinii are unnecessarily strong. Even the tinct. iodinii (B.P). may be sometimes advantageously diluted with spirit. It is important not to *mix* the iodine solution with the urine, and not to add too much of the iodine. From neglect of these precautions Dr. S. has known the test fail in the hands of others.

The green colour usually lasts for a considerable time, and may persist for days. Gradually it turns to a dusky brown, but even then the green can sometimes be restored by the cautious addition of iodine. Heat changes the green speedily to brown, and previous boiling of the urine prevents the development of the colour. Nothing characteristic was observed when the green fluid was examined by the spectroscope. The *cause* of the coloration evidently lies in a limited oxidation, the bilirubin, as in Gmelin's test, being probably converted into biliverdin, with this difference, that other tints—red, blue, or yellow—are not evoked by the feebler oxidizing power of the iodine.

The results of a number of experiments point to the conclusion that the green test is not a mere chromatic change, but is a true oxidation effect.

Up to the present Dr. S. has not been able to meet with a single source of fallacy in the use of the iodine test. Thus, in the deeply-coloured urines of continued fever, of acute pneumonia, of cirrhosis of the liver, of Addison's